

OUTLINE

MAGMAX[®] EGM2050C is an inexpensive, easy-to-use compact electromagnetic flowmeter and is suitable for measuring the flow rate of clean water, waste water, and warm water.

This flowmeter consists of the flange type EGS2000 primary head which is lined with polypropylene or hard rubber, and the EGC050 converter mounted on it.

The enhanced self-diagnosis unit can detect empty flow and monitor the status of the primary head.

Nominal sizes of 25mm to 1000mm are available.

FEATURES

- In addition to clean water and waste water, the EGM2050C can measure warm water up to 90°C thanks to the polypropylene lining having excellent heat resistance and durability (nominal size: 25 to 150mm).
- Hastelloy[®] C22 electrode as standard
- High accuracy of $\pm 0.5\%$ of reading
- High-speed data processing enables quick response. Suitable for controlling batch processes and measuring pulsating flows
- The extendable excitation system can handle applications with severe fluid noise such as slurry.
- The LCD with backlight provides various indications in 1–3 lines.
- The quick setup function makes it easy to handle changes in the flow range, pulse rate, etc.
The attached magnet can be used to change the settings without opening the cover of the converter.
- 10kHz high-speed pulse output. Capable of handling short batch processes.



STANDARD SPECIFICATION

General Specifications

- Excitation: Square wave
 - Nominal size: 25, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000mm
(Contact us for sizes larger than 1000mm.)
 - Measuring range:

Flow velocity	Min. 0 to 0.3m/s
	Max. 0 to 12m/s
Flow rate	Min. 0 to 0.531m ³ /h
	(the minimum flow rate for the size of 25mm)
	Max. 0 to 33928m ³ /h
	(the maximum flow rate for the size of 1000mm)
 - Protection class: IP66/67 (IEC 60529)
 - Materials of the main body

Measuring tube:	Stainless steel (SS304)
Primary head housing:	Carbon steel*1 (standard) *2 Stainless steel (SS304) (option)
Flange:	Carbon steel*1 (standard) Stainless steel (SS316L) (option)
Converter housing:	Aluminum alloy*1
Converter cover:	Aluminum alloy*1
- *1: Finished with anti-corrosion painting
*2: When the size is 25 to 40mm and the wetted part lining is hard rubber: Cast duplex stainless steel.

- Materials of wetting parts:
 - Lining: Polypropylene for sizes of 25 to 150mm (standard)
Hard rubber for sizes of 200 to 1000mm (standard)
Hard rubber for sizes of 25 to 150mm (option)
*For details, see "LINING MATERIAL AND FLANGE."
 - Electrode: Hastelloy® C22 (standard)
Stainless steel (SS316) (option)
 - Earth ring: Stainless steel (SS316) (option)
- Painting: Siloxane coating
- Color: Grey (Primary head housing/converter housing)
Jade green (Converter cover)
- Cable entry: 2×G1/2 female thread
2×1/2 NPT female thread
2×M20 with watertight glands
Watertight glands for G1/2 (option)
- Power supply:
 - 100 to 230V AC (85 to 253V AC)
 - 24V DC (17 to 31V)
 - *Figures in parentheses are the allowable voltage range.
- Power frequency:
 - 48 to 63Hz (AC)
- Power consumption:
 - Approx. 15VA (AC)
 - Approx. 6W (DC)
- Ambient temperature:
 - 40 to +65°C for operation
 - 40 to +70°C for storage
- Grounding: Less than 100Ω
- Process connection:
 - Flange
- Flanges: JIS10K/20K, ASME class 150/300, DIN PN10/16/40
*For details, see "LINING MATERIAL AND FLANGE."

Fluid Specifications

- Temperature: – 5 to +90°C* for polypropylene lining
– 5 to +80°C* for hard rubber lining
*For ATEX explosionproof, see "Explosionproof specifications."
- Pressure: Up to the rated pressure of flanges
*Allowable temperature and pressure depend on lining materials. For details, see "LINING MATERIAL AND FLANGE."
- Conductivity: 20 μS/cm or more

Indication and Output Specifications

- Indicator: Dot matrix LCD with backlight
128×64 pixels (59×31mm)
- Indication: Two-line display on the first screen
First line: Flow rate
Second line: Flow rate in bar graph (%)
Three-line display on the second screen
First line: Flow rate
Second line: Totalized flow in the forward direction
Third line: Totalized flow in the reverse direction
- Current output: 4–20mA DC (Max. 22mA in burn-out error mode)
Internal power supply: Less than 750Ω (load resistance)
External power supply: Less than 32V DC (external voltage)
- Pulse output (standard)
Open collector output
Rating: Less than 32V DC, 20mA (≦10kHz)
Less than 100mA (≦100Hz)
Residual voltage at ON: Less than 0.2V DC when circuit current is 10mA
Leak current at OFF: Less than 0.05mA when external circuit voltage is 32V DC
Pulse rate: 2 to 36,000,000 pulse/h (0.00056Hz to 10kHz)
Pulse width: Selectable from
(1) Automatic: Pulse width by which the duty factor becomes 50% at full scale
(2) Duty ratio fixed to 1:1
(3) Free setting: 0.05 to 500ms
- Status output (By changing the setting, the pulse output terminal can be switched to the status output terminal.)
Open collector output
Rating: Less than 32V DC, 100mA
Residual voltage at ON: Less than 0.2V DC when circuit current is 10mA
Leak current at OFF: Less than 0.05mA when external circuit voltage is 32V DC
Contents of output: Selectable from
(1) Flow direction
(2) Over range
(3) Error
(4) Flow alarm
(5) Empty flow detection

● Description of output terminals

Terminal	Default	Switchable to/from
A (A, A+ / A-)	Current output	—
D (D, D-)	Pulse output	Status output

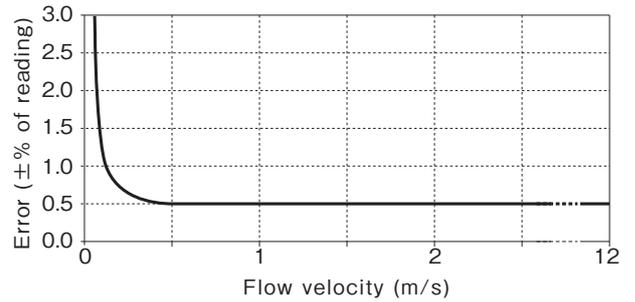
- Low-flow cutoff: Any value from 0.0 to 20.0% FS can be set separately for the current output, pulse output, and indication. The standard setting is as follows.
ON 1% and OFF 2% FS for the current output and pulse output
0% FS for the indication
- Damping time constant: Any value from 0.0 to 100.0s can be set separately for the current output, pulse output, and indication. The standard setting is as follows.
4s for the current output and indication
0s for the pulse output
- Isolation of inputs and outputs: Circuits for power supply, electrode input, excitation output, terminal A, and terminal D are isolated from each other.

Standard Functions

- Measuring unit creating function
Volume (or mass) and time units can be created in 7 characters for indicating flow rates.
- Automatic zero-adjustment function
Zero adjustment is automatically conducted in the zero adjust mode (at still flow).
- Bi-directional flow measurement function
The flow-direction signal is output from the status output and current output.
- Excitation frequency switching function
Standard mode: 1/6 × power frequency
Special mode: 1/50 to 1/2 × power frequency*2
- Self-diagnosis function
Error messages to be issued are as follows.
Functional diagnosis: Coil disconnection, CPU, memory, software, output module, and output connection
Status diagnosis: Empty flow, over range, counter overflow, and power failure
- Power interruption backup function
Parameter settings and totalized flow values are stored in EEPROM (nonvolatile memory) for more than 10 years.
- Testing function
Simulating current, pulse, and status outputs
Current: 0.0 to 22.0mA
Pulse: 1Hz to 10kHz
Status: ON/OFF
- Magnetic setting function
Settings can be changed with a magnet without opening the cover of the converter.
*2: Special modes can be set for various applications such as slurry and pulsating flow.

Accuracy *3

- Indication and pulse output
For velocity ≥ 0.5m/s: ±0.5% of reading
For velocity < 0.5m/s: velocity error ± 2.5mm/s



- Current output: Add ±0.01mA to the accuracy of indication or pulse output.

*3: Basic conditions

- Fluid: Water
- Fluid temperature: 10 to 30°C
- Conductivity: 150 μS/cm or more
- Supply voltage: Rated voltage ± 2%
- Ambient temperature: 18 to 28°C
- Upstream/downstream straight run: 10D/2D (D: Diameter)
- Warm-up time: About 10 minutes
- Measuring time: 100s

FLUID TEMPERATURE AND PRESSURE RANGE

Fluid Temperature

Lining material	Nominal size (mm)	Fluid temperature
Polypropylene	25 to 150	-5 to +90°C
Hard rubber	25 to 1000	-5 to +80°C

Allowable Maximum Pressure

Lining material	Nominal size (mm)	Allowable maximum pressure (MPa)*
Polypropylene	25 to 80 (except for 65)	4.0
	65, 100 to 150	1.6
Hard rubber	25 to 1000	15

*: Rated pressure for flanges prevails over the allowable maximum pressure. Values in the table are the maximum pressure for flow meters that can be manufactured.

Allowable Negative Pressure

*: Not allowable -: Not applicable

Lining material	Nominal size (mm)	Allowable negative pressure (kPa (abs)) at respective fluid temperatures			
		40°C	60°C	80°C	90°C
Polypropylene	25 to 150	25	40	40	*
Hard rubber	25 to 300	25	40	40	-
	350 to 1000	50	60	60	-

FLOW RANGE

Nominal size (mm)	Flow range can be set (m ³ /h)		Nominal size (mm)	Flow range can be set (m ³ /h)	
	Min. (flow velocity: 0 to 0.3m/s)	Max. (flow velocity: 0 to 12m/s)		Min. (flow velocity: 0 to 0.3m/s)	Max. (flow velocity: 0 to 12m/s)
25	0 to 0.531	0 to 21.2	300	0 to 76.4	0 to 3053
40	0 to 1.36	0 to 54.2	350	0 to 104	0 to 4156
50	0 to 2.13	0 to 84.8	400	0 to 136	0 to 5428
65	0 to 3.59	0 to 143	450	0 to 172	0 to 6870
80	0 to 5.43	0 to 217	500	0 to 213	0 to 8482
100	0 to 8.49	0 to 339	600	0 to 306	0 to 12214
125	0 to 13.3	0 to 530	700	0 to 416	0 to 16624
150	0 to 19.1	0 to 763	800	0 to 543	0 to 21714
200	0 to 34.0	0 to 1357	900	0 to 688	0 to 27481
250	0 to 53.1	0 to 2120	1000	0 to 849	0 to 33928

LINING MATERIAL AND FLANGE

⊙: Standard ○: Selectable —: Not selectable

Flange rating	Lining material	Nominal size (mm)																			
		25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000
JIS10K ※1	Polypropylene	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	—	—	—	—	—	—	—	—	—	—	—	—
	Hard rubber	○	○	○	○	○	○	○	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
JIS20K	Polypropylene	⊙	⊙	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Hard rubber ※2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—	—	—	—
ASME class 150	Polypropylene	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	—	—	—	—	—	—	—	—	—	—	—	—
	Hard rubber	○	○	○	○	○	○	○	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
ASME class 300	Polypropylene	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Hard rubber ※2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—	—	—	—
DIN PN10	Hard rubber	—	—	—	—	—	—	—	—	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
DIN PN16	Polypropylene	—	—	—	⊙	—	⊙	⊙	⊙	—	—	—	—	—	—	—	—	—	—	—	—
	Hard rubber	—	—	—	○	—	○	○	○	○	○	○	○	○	○	○	○	—	—	—	—
DIN PN25	Polypropylene	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Hard rubber ※2	—	—	—	○	—	○	○	○	○	○	○	○	○	○	○	○	—	—	—	—
DIN PN40	Polypropylene	⊙	⊙	⊙	—	⊙	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Hard rubber ※2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—	—	—	—

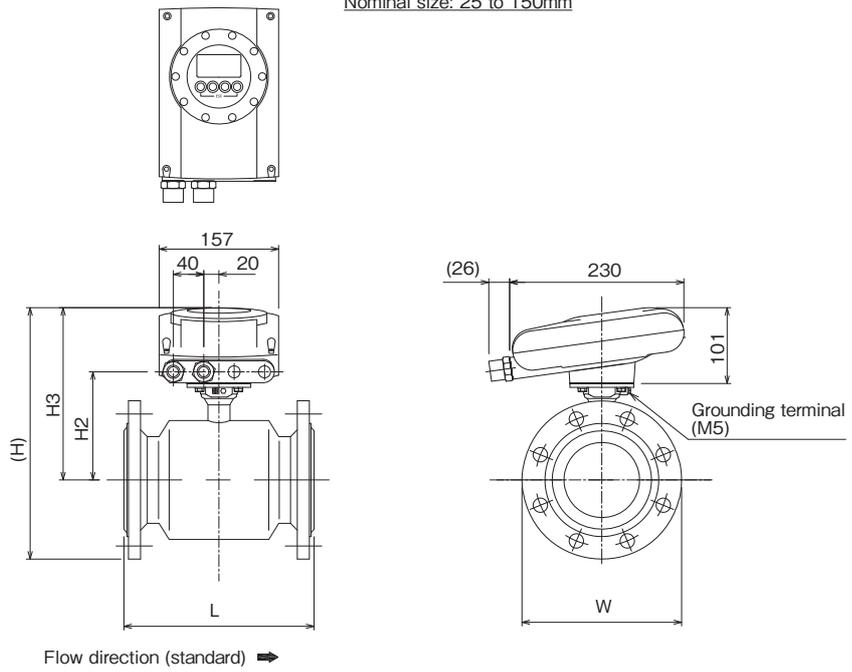
※1 For a nominal size of 25 or 40mm, the JIS20K flange is the standard but the JIS10K flange is also selectable.
(Except for thickness, all sizes of the JIS10K flange are the same as those of the JIS20K flange.)

※2 For a nominal size of up to 150mm, the housing of the primary head differs in shape from the standard type.

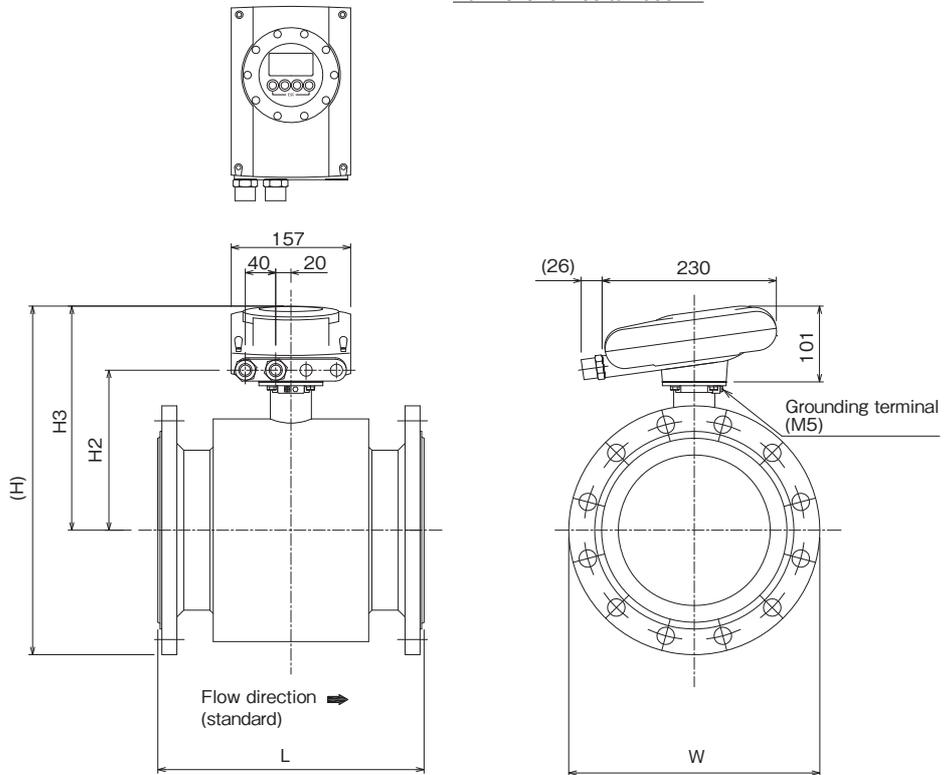
DIMENSIONS

Version A type (standard) :

Nominal size: 25 to 150mm



Nominal size: 200 to 1000mm

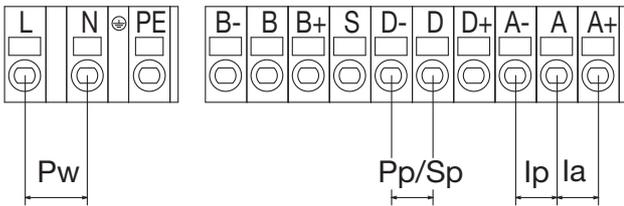


Nominal size (mm)	Dimensions (mm)							Mass (kg)	
	L ※1		(H)		H2	H3	W ※2	JIS 10K	ASME 150
	JIS 10K	ASME 150	JIS 10K	ASME 150					
25	150	150	247	239	130	185	90	10	11
40	150	150	262	256	137	192	105	11	12
50	200	200	281	280	149	204	120	11	12
65	200	200	290	291	153	208	140	13	14
80	200	200	303	305	155	210	150	15	16
100	250	250	333	342	173	228	175	18	21
125	250	250	367	369	187	242	210	22	25
150	300	300	398	397	203	258	240	25	29
200	350	350	465	471	209	300	291	40	49
250	400	400	521	524	230	321	331	55	71
300	500	500	568	587	255	346	381	66	103
350	500	700	613	634	277	368	428	86	137
400	600	800	674	692	303	394	483	107	175
450	600	800	729	736	328	419	533	127	196
500	600	800	783	794	354	445	585	138	233
600	600	800	898	906	409	500	694	176	318
700	700	—	1011	—	468	559	812	258	—
800	900	—	1125	—	524	615	922	342	—
900	1000	—	1227	—	576	667	1026	440	—
1000	1200	—	1337	—	628	719	1132	524	—

- ※ 1
 (1) The face-to-face dimension (L) does not include the thickness of earth rings.
 (2) When including the thickness of earth rings, face-to-face dimension (L') will be calculated as follows.
 $L' = L + 2 \times (3 + t)$ mm
 t: Thickness of gaskets between lining and earth rings*
 * When attaching earth rings, gaskets are required between the lining of the primary head and earth rings.
 (3) The face-to-face dimensions (L) above are for flanges with a rating of JIS10K or ASME class 150.
 Contact us for other ratings.

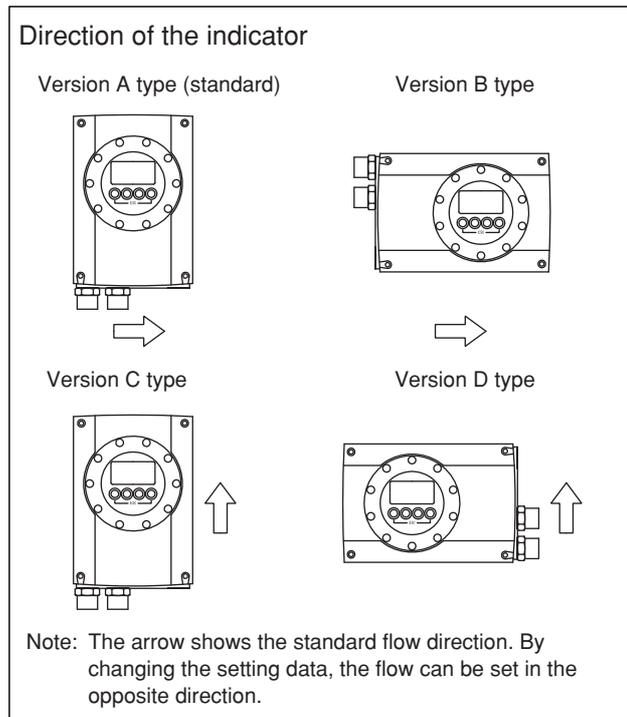
※ 2
 The size W shows the size of the housing (outer casing).

ELECTRICAL CONNECTION



Symbol	Terminal	Polarity	Description
Ip	A	+	Current output when power is supplied externally
	A-	-	
Ia	A	-	Current output when power is supplied internally
	A+	+	
Pp/Sp	D	+	Pulse output or status output by open collector
	D-	-	
Pw	L (L+)	(+)	AC or DC power supply + or - in parentheses shows the polarity of a DC power supply.
	N (L-)	(-)	
	PE (FE)		Grounding for the power supply. "FE" is for a DC power supply.
	D+/S/B+/B-/B-		Not used.

- Terminal type: Spring clamp terminal
- Applicable core size: 0.5 to 2.5mm²



● Nominal size: 200 to 600mm

Model: EGM2050C

Primary head spec. code	V	N	1	5	4			0	1	K	0	1	0	0	0	0	0	0	0	0	0	0	0	Description	Standard
Primary head code	V	N	1	5																			Flange type	○	
(Fixed code)					4																		Always 4	○	
Nominal size						E																	200mm	○	
						F																	250mm	○	
						G																	300mm	○	
						H																	350mm		
						K																	400mm		
						L																	450mm		
						M																	500mm		
Flange						N																	600mm		
						2																	DIN PN10		
						3																	DIN PN16		
						4																	DIN PN25		
						5																	DIN PN40		
						A																	ASME class 150		
						B																	ASME class 300		
						M																	JIS 20K		
						N																	JIS 10K	○	
						9																	Others		
(Fixed code)					0																	Always 0	○		
Type						1	K																Compact type (EGC050 converter)	○	
Lining						0																	Hard rubber	○	
Material of electrode						1																	Stainless steel (SS316)		
						B																	Hastelloy® C22	○	
Electrode construction						1																	Fixed type	○	
Material of primary head housing and flange						1																	Carbon steel/carbonsteel	○	
						3																	Carbon steel/stainless steel (SS316L)	○	
Protection class						0																	IP66/67	○	
(Fixed code)						0	0																Always 00	○	
Calibration						0																	Standard	○	
Material of earth ring						0																	None	○	
						6																	Stainless steel (SS316) ※2		
						9																	Others ※2		
(Fixed code)					0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Always 02000000	○	
Special feature																							(Blank) None	○	
						/Z																	Specified ※3		

Converter spec. code	V	N	3	4	4	4	0	6	0	0	2	1	0	0	0	0	0	0	0	0	0	0	Description	Standard
Converter code	V	N	3	4																			Model : EGC050	○
(Fixed code)					4																		Always 4	○
Type					4																		Compact type	○
Power supply						1																	24 V DC (17 to 31V)	
						A																	100 to 230 V AC (85 to 253V)	○
(Fixed code)						0																	Always 0	○
Cable entry						4																	1/2 NPT female thread	
						5																	G 1/2 female thread	○
						6																	M20 with watertight glands	
(Fixed code)					6	0	0																Always 600	○
Orientation of indicator installation						A																	Version A (standard)	See "Direction of the indicator"
						B																	Version B ※5	
						C																	Version C ※5	
						D																	Version D	
(Fixed code)						2																Always 2	○	
Output type						1																	Standard (current output + pulse output or status output)	○
(Fixed code)						0	0	0	0	0	0												Always 00000	○
Special feature																							(Blank) None	○
						/Z																	Specified	

※2 : Earth rings will be inserted between the primary head and the flange (see notes on Page 5).
 ※3 : Add code "/Z" at the end of your spec. code and provide us with details. To check feasibility, contact us before ordering.
 ※5 : JIS20K, ASME class 300 or larger flanges are not applicable to models with a nominal size of 200mm.

STANDARD ACCESSORIES

- Parameter sheet : 1
- Instruction manual : 1
- Magnet for data setting : 1

OPTION

- Watertight gland for G1/2 female threads: WG

ORDERING

Please specify the following when ordering.

1. Model and specification codes

Example: Model: EGM2050C

Primary head spec. code:VN1447N01K8B110000002000000

Converter spec. code:VN3444A05600A2100000

2. Full scale flow range (not necessary for option /NS)

3. Optional specifications (if necessary)

Please specify desirable options with symbols with reference to the above section.

4. Name of process fluid

* Specification is subject to change without notice.

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